Volunteer Lake Assessment Program Individual Lake Reports

JACKMAN RESERVOIR, HILLSBOROUGH, NH

MORPHOMETRIC DATA | **TROPHIC CLASSIFICATION** | **KNOWN EXOTIC SPECIES**

Watershed Area (Ac.):	44,223	**Max. Depth (m):**	9.2	**Flushing Rate (yr^{1})**	9.6	**Year**	**Trophic class**	
Surface Area (Ac.):	520	**Mean Depth (m):**	4.7	**P Retention Coef:**	0.37	1988	OLIGOTROPHIC	
Shore Length (m):	11,300	**Volume (m^3):**	9,895,000	**Elevation (ft):**	770	2005	OLIGOTROPHIC	

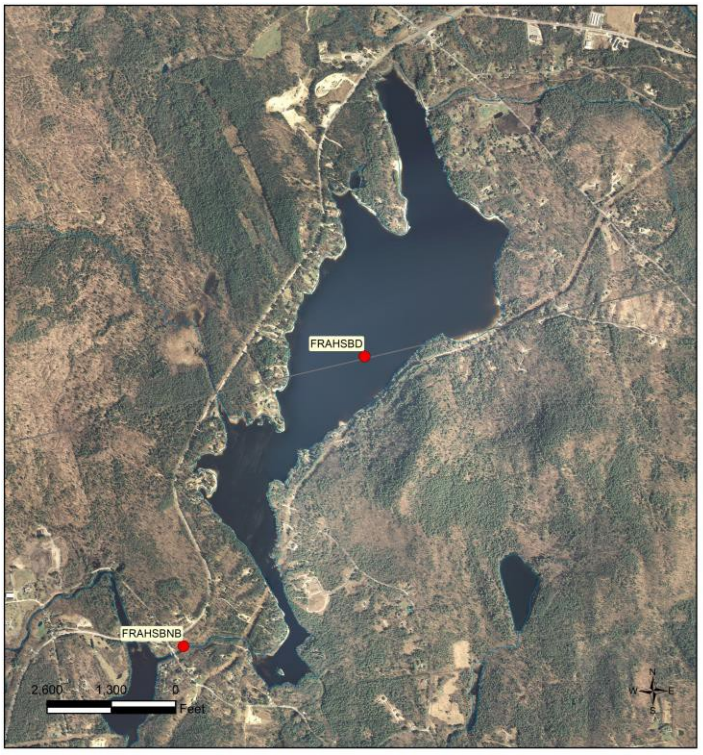
The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at NHDES' Water Quality Assessment Website.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

JACKMAN RESERVOIR - MANAHAN PARK TOWN BEACH	Escherichia coli	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.

VLAP SAMPLE STATION MAP: This map depicts the location of routine sampling stations discussed on page two of the report.



FRANKLIN PIERCE LAKE
HILLSBOROUGH
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
FRAHSBD	DEEP SPOT
FRAHSBNB	NORTH BRANCH

Source: The data layers are derived from NHDES data and are under constant revision. NHDES is not responsible for the use or interpretation of this information. Not intended for legal use.NHDES Watershed Management Bureau Date: 2/17/2021

Volunteer Lake Assessment Program Individual Lake Reports
Franklin Pierce Lake, Hillsborough
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Lake nutrient (phosphorus) levels continued to be representative of oligotrophic, or high quality, conditions, however algal (chlorophyll) growth remained elevated which can be an indicator of a shift in water quality. Phosphorus levels were also elevated in the North Branch inlet following a significant storm event indicating potential pollutants within that sub-watershed and highlighting the importance of managing stormwater runoff. NHDES' "NH Homeowner's Guide to Stormwater Management" is a great resource. Consider development of a watershed management plan to protect high quality waters. For more information contact the NHDES' Watershed Assistance Section at katherine.zink@des.nh.gov. Encourage shoreline property owners to be certified LakeSmart through NHLAKES lake-friendly living program www.nhlakes.org/lakesmart/. The improving pH levels are encouraging and indicate recovery of surface waters from historical impacts of acid precipitation. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll level was within a slightly elevated range in June, remained stable with 2019, and was greater than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic middle water layer) and Hypolimnetic (lower water layer) conductivity levels were low and less than the state median. Epilimnetic chloride level was also low and slightly greater than the state median. Historical trend analysis indicates stable, yet variable, epilimnetic conductivity levels since monitoring began. North Branch conductivity and chloride levels were slightly greater than the state medians yet much less than a level of concern.
- **Color:** Apparent color measured in the epilimnion indicates moderately tea colored, or brown, water.
- **Total Phosphorus:** Epilimnetic and Hypolimnetic phosphorus levels were within a low range. Epilimnetic phosphorus level remained stable with 2019 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level was within a moderate range potentially due to the slightly elevated algal growth. North Branch phosphorus level was elevated following a significant storm event prior to sampling.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was within an average range for the lake, remained stable with 2019, and was higher (better) than the state median. Historical trend analysis indicates stable, yet variable, NVS transparency since monitoring began.
- **Turbidity:** Epilimnetic, Metalimnetic, Hypolimnetic, and North Branch turbidity levels were within a low range.
- **pH:** Epilimnetic pH level was within the desirable range 6.5-8.0 units and historical trend analysis indicates significantly increasing (improving) epilimnetic pH levels since monitoring began. Metalimnetic, Hypolimnetic and North Branch pH levels were slightly acidic and potentially critical to aquatic life.

Station Name	Table 1. 2020 Average Water Quality Data for JACKMAN RESERVOIR - HILLSBOROUGH									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	3.1	6.16	7	50	33.4	6	3.53	3.88	0.49	6.87
Metalimnion					32.2	9			0.45	5.53
Hypolimnion					31.3	7			0.35	5.40
North Branch			14		50.3	27			0.38	6.17

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.3 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data highly variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Improving	Data significantly increasing.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.